

Compliance Guide for the Concentrated Aquatic Animal Production Point Source Category

Chapter 13: Perform Training for Flow-through, Recirculating, and Net Pen Facilities

Full document available at
<http://www.epa.gov/waterscience/guide/aquaculture>

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Chapter 13: Perform Training for Flow-through, Recirculating, and Net Pen Facilities



Training

The CAAP ELGs require facilities to train all relevant personnel in spill prevention and how to respond in the event of a spill to ensure proper clean-up, and disposal of spilled materials. Facilities are also required to train personnel in the following areas:

- Operation and cleaning of production systems.
- Operation and cleaning of wastewater treatment systems.



Examples of Training Practices

1) Develop and implement an employee-training program to train relevant personnel in spill prevention and response



Employee training programs can be established to train employees how to prevent and respond to spills. Employee training programs should instill all personnel with a thorough understanding of the facility's Spill Response and Prevention Plan, including BMPs, practices for preventing spills, and procedures for responding quickly and properly to spills.

Employees can be taught through posters, employee meetings, courses, signs, and bulletin boards about spill prevention and response. Facilities may also use "in-field training" programs, where they show employees specific areas of the facility

where potential spills could occur, followed by a discussion of site-specific BMPs providing solutions to spill prevention and response. Trained personnel can provide discussion to other staff within the facility.

Advantages of an employee-training program are that the program can be a low-cost and easily implementable procedure for addressing spills at aquaculture facilities. The program can be standardized and repeated as necessary, both to train new employees and to keep its objectives fresh in the minds of already trained employees. A training program is also flexible and can be adapted as a facility's management needs change over time.

Specific design criteria for implementing an employee-training program include:

- Ensuring strong commitment and periodic input from senior management.
- Communicating frequently to ensure adequate understanding of goals and objectives.
- Using experience from past spills to prevent future spills.
- Making employees aware of BMP monitoring and spill reporting procedures.
- Developing operating manuals and standard procedures.
- Implementing spill drills.

An employee-training program should be an on-going, yearly process. A sample employee training log that can be used to track employee-training programs is

available in Appendix S of this document. Refer to Chapter 10 in this guidance for more specific information about developing a Spill Response and Prevention Plan.

2) Develop and implement an employee-training program to train relevant personnel in proper operation and cleaning of production and wastewater treatment systems, including feeding practices and proper use of equipment¹



Employee training programs can be established to train employees how to properly operate and clean production and wastewater treatment systems (only flow-through and recirculating systems must train employees for operating and cleaning wastewater treatment systems), including feeding procedures and proper use of equipment.

Employees can be taught through posters, employee meetings, courses, signs, and bulletin boards about properly operating and cleaning production systems and wastewater treatment systems at your facility.

General guidance for properly operating and cleaning some of the components found in CAAP systems is available throughout the remainder of this chapter.

3) Properly operate flow-through and recirculating production systems



To properly operate production systems at your facility to reduce solids, identify what practices reduce solids (based on your facility's unique design characteristics), and

¹ Net pen systems are not required to train personnel in proper operation and cleaning of wastewater treatment systems.

maintain those practices. For example, maintain minimum flows to system components where required to ensure the system is self-cleaning.

Examples of other practices you can do to properly operate your systems so solids are reduced include the following:

- Avoid short-circuiting flows in the quiescent zones.
- Ensure that drainpipes and dam boards are working properly.
- Clear screens in raceways of debris.
- Do not exceed the carrying capacity of your system.
- Design and implement a feed management program.

4) Properly clean flow-through and recirculating production systems



When cleaning raceways or tanks at your facility make sure you do the following:

- Send cleaning water to a treatment system, such as an offline settling basins or full-flow settling basins.
- Clean raceways or tanks as frequently as necessary.

5) Properly clean nets



The regular cleaning of production nets helps to ensure a constant flow of water through the production area of the net pen. As the net pen sits in the culture area, marine organisms attach and grow on the nets. These organisms reduce the area of the openings. The reduction in area reduces the water flow through the net pen and the amount of dissolved oxygen available, and it increases the buildup of metabolic waste.

The following practices will help facilities to clean their nets, while minimizing the impact of this practice on the environment:

- Minimize the concentration of net-fouling organisms that are discharged during events such as changing and cleaning nets.
- Remove fouled nets, transport ashore, air dry, and clean with pressure washers, if necessary. Avoid discharges of cleaning water or net-fouling organisms to open waters.
- Avoid discharges of chemicals used to clean nets or other gear in open waters.
- Do not use materials containing or treated with tributyltin.

6) Properly operate and clean quiescent zones

The following practices may help you to properly operate your quiescent zone to reduce solids:

- Ensure that the turbulence is reduced (for example, preventing short circuiting by ensuring drains and outlets are operating as designed) enough so the solids will settle in the quiescent zones.
- Prevent fish from entering quiescent zones by maintaining the integrity of the screen that separates the raceways and quiescent zones.

The following guidance for cleaning quiescent zones is based on the *Idaho Waste Management Guidelines for Aquaculture Facilities* (IDEQ, n.d.).

- Settled solids should be removed regularly so they cannot become entrained in the wastewater flow and

contribute to the pollutant loadings of the facility. Two operational factors associated with operating quiescent zones are (1) the necessity to clean the screens, and (2) the regular removal of collected solids from the quiescent zones.

- Quiescent zones should be cleaned as frequently as possible, in most cases, at least once every 2 weeks.
- Screens separating the rearing area from the quiescent zone should be cleaned daily to promote laminar flow in the settling area.

7) Properly clean and operate sedimentation basins

Solids must be removed at proper intervals to ensure the designed removal efficiencies of the sedimentation basin. For both off-line settling (OLS) and full-flow settling (FFS) basins, IDEQ recommends a minimum harvest frequency of every 6 months. Infrequent harvests could result in the breakdown of solids and the release of dissolved nutrients into the receiving waters.

For FFS basins, some facilities might batch crop their fish so that they can all be harvested at the same time. Then solids can be harvested from the FFS basins when the facility is empty (IDEQ, n.d.).

System operators should attempt to minimize the breakdown of particles (into smaller sizes) to maintain or increase the efficiency of sedimentation basins.

The following practices may be used to properly operate your sedimentation basin to reduce solids and are based on the *Idaho Waste Management Guidelines for Aquaculture Facilities* (IDEQ, n.d.):

- Regularly check the depth of collected solids and clean out the basin when the sediment depth exceeds 50% of the design depth.
- Check pipes and basin walls for cracks and other damage.
- Check for solids “caking” around the basin drain structure to ensure proper draining of treated effluent.
- Check area around the outfall for signs of erosion and repair any damage.
- Check outlet pipes for clogging.

8) Properly clean and operate microscreen filters



Filters require cleaning to remove trapped particles. Sprayers are used to remove collected particles and to provide additional filter cleaning. Filters may also be cleaned using a periodic rinse cycle with a heated solution.

The following practices may be used to properly operate your microscreen filters to reduce solids and are based on the *Idaho Waste Management Guidelines for Aquaculture Facilities* (IDEQ, n.d.):

- Regularly check for normal operation of the filter unit.
- Inspect all moving parts for proper operation.
- Refer to the manufacturer’s operation and maintenance manual for specific details.
- Check for wear or holes in microscreens.
- Lubricate bearings according to manufacturer’s recommended schedules.
- Check for proper operation of wash pump and cleaning nozzles.